

Abstract Submitted  
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**An Equation of State study of a Boron Nitride rubber composite using a Single Stage Gas Gun** PETER TAYLOR, PETER KEIGHTLEY, AWE Aldermaston, HYDRODYNAMICS DEPARTMENT TEAM — The equation of state of a Boron Nitride powder / Neoprene / Polythene composite has been determined experimentally up to 5GPa using a single stage Helium gas gun. The newly commissioned gun operates using a fast acting gas valve breech, and is capable of launching a 65mm diameter flyer at up to 1km/s. A series of 1D plate impact experiments has been employed using a shock reverberation or ring-up technique in which the sample is sandwiched between layers of a higher shock impedance material. Manganin stress gauges are used to measure the stress levels and shock arrival times as the shocks reverberate within the sample layer. The Hugoniot has been determined from the measured stress and shock velocity at several impact velocities for the first shock. Subsequent reflected shocks within the sample have been measured and used to determine off Hugoniot states and hence Gruniesen Gamma in order to derive the equation of state.

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